In the Claims:

1-14 (Canceled)

15. (Amended) A method of bandwidth control of a narrow band gas discharge laser having a grating based line narrowing unit with a grating defining a grating face comprising the step of forcing a flow of helium gas across said grating face to stabilize the bandwidth of the laser.

16.(previously presented) The method as in Claim 15 wherein said gas flow is less than 20 liters per minute.

17. (original) The method as in Claim 16 wherein said gas flow is between 1 and 8 liters per minute.

18. (original) A grating based line narrowing device for line narrowing a laser producing a high energy laser output light pulse beam, comprising:

a grating defining a grating face;

a chamber housing at least the grating;

a first purge gas source providing a first purge gas purging the chamber;

a beam expander expanding a beam in the laser cavity to produce an expanded beam;

a tuning mechanism directing the expanded beam onto the grating face to select from the expanded beam a desired spectrum comprising at least one spectral peak centered around a selected center wavelength and having a desired spectral width less than or equal to a desired maximum spectral width;

wherein the expanded beam heats the grating face producing a temperature increase in the grating face which in turn heats the first purge gas in a hot first purge gas

layer adjacent to the grating face; and

a heat removal mechanism removing heat from the hot first purge gas layer to reduce optical distortion caused by said hot first purge gas layer comprising a mechanism providing a flow of a second purge gas across the grating face removing the hot first purge gas layer from the grating face.

19. (original) The apparatus of claim 18, further comprising:
the heat removal mechanism comprises a second purge gas manifold having a plurality of small ports for directing the second purge gas across the grating face.

20. (original) The apparatus of claim 18 further comprising:
an actively controlled grating curvature control mechanism providing active control of the shape of the grating face based upon feedback indicative of at least one laser output light pulse parameter.

21. (original) The apparatus of claim 19 further comprising:
an actively controlled grating curvature control mechanism providing active control of the shape of the grating face based upon feedback indicative of at least one laser output light pulse parameter.

22. (original) The apparatus of claim 20 further comprising:
the controlled shape of the grating face comprises the curvature in the longitudinal axis of the grating.

23. (original) The apparatus of claim 21 further comprising:
the controlled shape of the grating face comprises the curvature in the longitudinal axis of the grating.

24. (original) The apparatus of claim 22 further comprising:
the controlled shape of the grating face comprises a complete curvature in the longitudinal axis of the grating and transverse to the longitudinal axis.

25. (original) The apparatus of claim 23 further comprising:

the controlled shape of the grating face comprises a complete curvature in the longitudinal axis of the grating and transverse to the longitudinal axis.

26. (original) The apparatus of claim 18, further comprising:
the heat removal mechanism comprises a grating purge gas flow control mechanism for controlling purge gas flow across the grating face.

27. (original) The apparatus of claim 19, further comprising:
the heat removal mechanism comprises a grating purge gas flow control mechanism for controlling purge gas flow across the grating face.

28. (original) The apparatus of claim 20, further comprising:
the heat removal mechanism comprises a grating purge gas flow control mechanism for controlling purge gas flow across the grating face.

29. (original) The apparatus of claim 21, further comprising:
the heat removal mechanism comprises a grating purge gas flow control mechanism for controlling purge gas flow across the grating face.

30. (original) The apparatus of claim 22, further comprising:
the heat removal mechanism comprises a grating purge gas flow control mechanism for controlling purge gas flow across the grating face.

31. (original) The apparatus of claim 23, further comprising:
the heat removal mechanism comprises a grating purge gas flow control mechanism for controlling purge gas flow across the grating face.

32. (original) A device as in Claim 26 wherein the purge gas flow control mechanism comprises structures defining a flow path across the grating face and then away from the grating face.

33.(original) A device as in Claim 27 wherein the purge gas flow control mechanism comprises structures defining a flow path across the grating face and then away from the grating face.

34. (original) A device as in Claim 28 wherein the purge gas flow control mechanism comprises structures defining a flow path across the grating face and then away from the grating face.

35. (original) A device as in Claim 29 wherein the purge gas flow control mechanism comprises structures defining a flow path across the grating face and then away from the grating face.

36. (original) A device as in Claim 30 wherein the purge gas flow control mechanism comprises structures defining a flow path across the grating face and then away from the grating face.

37. (original) The apparatus as in Claim 32 wherein the heat removal mechanism comprises a purge gas manifold having at least one long very narrow slot.

38. (original) The apparatus as in Claim 37 wherein the slot is in the form of a long rectangular shaped nozzle.

39. (original) The apparatus as in Claim 38 wherein the second purge gas flow through the manifold is less than 20 liters per minute.

40. (original) The apparatus as in Claim 39 wherein said helium purge gas flow is about 2 liters per minute.

41.(original) The apparatus as in Claim 18 and further comprising a vacuum pump for creating a vacuum in the chamber.

42. (original) The apparatus as in Claim 41 wherein the vacuum is a pressure of about 1 to 10 millibars.

43. (original) The apparatus as in Claim 42 wherein the vacuum is chosen so that gas molecules inside said chamber have a mean free path of between 5 cm and 30 cm.

44. (original) The apparatus as in Claim 18 and further comprising a fan and at least one manifold configured to force a flow of the second purge gas across the grating face.

45. (original) The apparatus of Claim 18 further comprising:

the first purge gas comprises nitrogen and the second purge gas comprises helium

46. (amended) A method of bandwidth control of a narrow band gas discharge laser having a grating based line narrowing unit with a grating defining a grating face comprising

forcing a flow of gas across said grating face to stabilize the bandwidth of the laser.

47. (original) The method of Claim 46 wherein the purge gas flow is less than 20 liters per minute.

48. (original) The method of Claim 46 wherein said gas flow is between 1 and 8 liters per minute.

49. (original) The apparatus of Claim 18 further comprising:

the first and second purge gases comprise helium.